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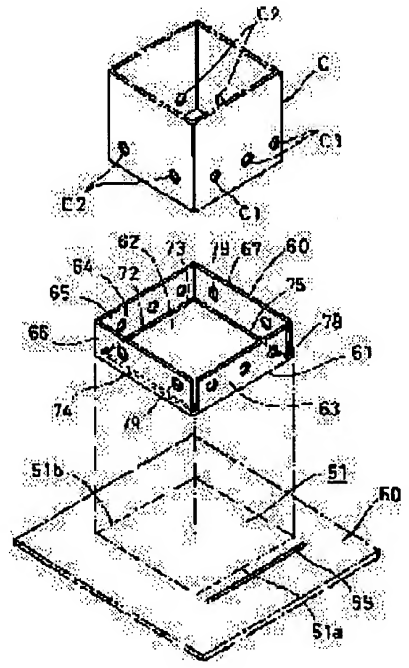
(54) AIR BAG DOOR STRUCTURE OF CABIN SIDE MEMBER

(57)Abstract:
PROBLEM TO BE SOLVED: To provide an air bag door structure of a cabin-side member which is excellent in appearance, and in which tear of the air bag door part does not reach any parts other than breakage-expected parts when the air bag is inflated, and the breakage-expected part of the air bag door part can surely be torn.
SOLUTION: A hinge side breakage-expected part 55 is provided at least on a door rotary shaft side 51a of an air bag door opening expected part 51 of a cabin side member 50, and a body part 61 of a door reinforcement member 60 is integrated with the cabin side member. The hinge part 61 which is the door rotary shaft along the inner side of the hinge side breaker expected part of the cabin side member and a hinge side fitting part 63 to an air bag storage container are formed on the body part, and an opening side breakage expected part 72 (73, 74, 75) is formed on a door opening part side 51b of the air bag door opening scheduled part and a reinforcement member fitting part 64 (65, 66, 67) to the air bag storage container along the outer side of the opening side breakage scheduled part are formed.



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* NOTICES *

1. This document has been translated by computer.So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] In the air bag door structure where the door reinforcement member was backed by one at the rear-face side of the air bag door opening schedule section of vehicle room flank material The opening side fracture schedule section is prepared in the air bag door opening schedule section of the aforementioned vehicle room flank material at a hinge side fracture schedule section and door opening section side at a door axis-of-rotation side. And while the vehicle room flank material attachment section to an air bag hold container is formed in one along the outside of the aforementioned opening side fracture schedule section As for the aforementioned door reinforcement member, the soma of this is united with the aforementioned vehicle room flank material. And air bag door structure of the vehicle room flank material characterized by forming in this soma of this the hinge region which serves as the door axis of rotation along with the inside of the hinge side fracture schedule section of the aforementioned vehicle room flank material, and the hinge side attachment section to an air bag hold container.
[Claim 2] Air bag door structure of vehicle room flank material where the opening side fracture schedule section of the aforementioned vehicle room flank material is located in the fundamental circles side of the vehicle room member attachment section in a claim 1.
[Claim 3] Air bag door structure of vehicle room flank material where the length of the aforementioned vehicle room flank material attachment section was formed in claims 1 or 2 for a long time than the length of the aforementioned opening side fracture schedule section.
[Claim 4] In the air bag door structure where the door reinforcement member was backed by one at the rear-face side of the air bag door opening schedule section of vehicle room flank material While the hinge side fracture schedule section is prepared in the air bag door opening schedule section of the aforementioned vehicle room flank material at least at the door axis-of-rotation side As for the aforementioned door reinforcement member, the soma of this is united with the aforementioned vehicle room flank material. to this soma of this The hinge region which serves as the door axis of rotation along with the inside of the hinge side fracture schedule section of the aforementioned vehicle room flank material, and the hinge side attachment section to an air bag hold container are formed. the door opening section side of the aforementioned air bag door opening schedule section — the outside of the opening side fracture schedule section and this opening side fracture schedule section — meeting — the reinforcement to an air bag hold container — a member — the air bag door structure of the vehicle room flank material characterized by forming the attachment section
[Claim 5] a claim 4 — setting — the aforementioned door reinforcement — the opening side fracture schedule section of a member — reinforcement — a member — the air bag door structure of the vehicle room flank material located in the fundamental circles side of the attachment section
[Claim 6] claims 4 or 5 — setting — the hinge side fracture schedule section of the aforementioned door vehicle room flank material — reinforcement — the air bag door structure of the vehicle room flank material located in the fundamental outside side of the hinge side attachment section of a member
[Claim 7] Air bag door structure of vehicle room flank material where the vehicle room flank

material opening side fracture schedule section which can be fractured to the door opening section side of the air bag door opening schedule section of the aforementioned vehicle room flank material was formed in a claim 4 or either of 6.
[Claim 8] a claim 4 or either of 7 — setting — the aforementioned vehicle room flank material and door reinforcement — the air bag door structure of vehicle room flank material where the quality of the material of a member consists of the following combination
Vehicle room flank material: The **** elongation of JIS-K7113 is larger than 300%, and the bending elastics modulus of JIS-K7203 are 20000 kgf/cm2. It is large, the heat deflection temperature of JIS-K7207 is larger than 120 degrees C, and a polypropylene regin with the larger eye ZODDO impact strength (23 degrees C) of JIS-K7110 than 15 kg-cm/cm and the bending elastic modulus of door reinforcement member:JIS-K7203 are 3000 kgf/cm2. It is large and is an olefin system elastomer with the larger eye ZODDO impact strength (-40 degrees C) of

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[Translation done.]

* NOTICES *

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the air bag door structure where the door reinforcement member was especially backed by one at the rear-face side of the air bag door opening schedule section of vehicle room flank material, about the air bag door structure in the vehicle room flank material of an automobile, for example, an instrument panel.
[0002]
[Description of the Prior Art] As the air bag equipment formed in the passenger side of an automobile is shown in attached drawing 17 and attached drawing 18 of a drawing, the folded-up air bag A is held with the air bag operation member (inflator) I in the air bag hold container C, and it is stored in the instrument-panel 150 inside which is the vehicle room flank material of the front face of a passenger seat. The upper part of this air bag hold container C is constituted as opening O for an air bag A developing to the vehicle interior of a room, and the attachment section 154 to the vehicle room flank material 150 is formed in the periphery. And this air bag hold container C is fixed to the rear face of the vehicle room flank material 150 through the attachment section 154, and the opening O is covered by the air bag door section D formed in this vehicle room flank material 150 at one.
[0003] Partition formation of the air bag door section D of the vehicle room flank material 150 is carried out at the general portion and one by forming the fracture schedule section 51 which becomes this vehicle room flank material 150 from fragile sites, such as a V groove and a slit, the shape of an abbreviation KO character, and in the shape of a RO character. and door reinforcement of an aluminum board, a griddle, etc. which have a hinge region 152 in the rear-face side of the air bag door section D divided by this fracture schedule section 151 — the member 153 is backed by one
[0004] When an automobile once gets a big shock, the aforementioned starting device I operates and an air bag A expands in an instant, the air bag door section D is pressed from the inside, the aforementioned fracture schedule section 151 cleaves, and the air bag door section D carries out opening of the air bag equipment which consists of such composition through a hinge region 152. An air bag A is developed to the aforementioned opening O empty-vehicle interior of a room.
[0005] If it is in this structure, since the air bag door section D is formed in the vehicle room flank material 150 at one, as compared with the thing of form which fabricates the air bag door section another and attaches it, there is an advantage from which appearance nature becomes good. however, on the other hand, when the fracture schedule section 151 has the shape of a character of abbreviation KO as shown in drawing as shown in drawing 19 and drawing 20 for example In order for transfer of cleavage 151a of the direction of width (right and left) and cleavage 151b of the direction of length (before or after) not to go by the corner portion 155 of the fracture schedule section 151 etc. smoothly at the time of cleavage but to eat into the vehicle room flank material of the cleavage directions E1 and E2, Things have produced resistance in expansion of the door section D by these interlocking sections F1 and F2.
[0006] Although the circumference is reinforced by the door reinforcing materials 153 if it is in

the hinge region 152 side of the aforementioned air bag door section D especially, since the vehicle room flank material of fracture schedule section 151 periphery which becomes a door opening side is not reinforced, it is easy to produce cleavage in portions other than this fracture schedule section 151.

[0007] Moreover, although the air bag door section D is backed by the door reinforcing materials 153 as shown in drawing 21 , as for this reinforcing materials 153, it is common by forming a boss 156 in the air bag door section D rear face of the vehicle room flank material 150, and carrying out heat caulking of this boss 156 through reinforcing materials 153 to be fixed to vehicle room flank material 150 rear faces by one. Therefore, it is desirable to, detach the aforementioned boss 156 and the fracture schedule section 151 if possible, and to prepare them so that the brittle fracture schedule section 151 may not be influenced by heat. However, the aforementioned fracture schedule section 151 is pulled by the boss 156 in this case in the case of opening of the air bag door section D, deflection G like drawing 22 arises in the air bag door section, and there is a possibility of cleaving like the sign H of drawing 23 except fracture schedule section 151.

[0008]

[Problem(s) to be Solved by the Invention] It is proposed in order to solve such a trouble, the appearance of this invention is good, and it tends to offer the air bag door structure of the vehicle room flank material which can make the fracture schedule section of the air bag door section cleave certainly, without moreover cleavage of the air bag door section attaining to portions other than the fracture schedule section in the case of air bag expansion.

[0009]

[Means for Solving the Problem] Namely, it sets as a means to attain the aforementioned purpose, in the air bag door structure where the door reinforcement member was backed by the 1st at one at the rear-face side of the air bag door opening schedule section of vehicle room flank material. The opening side fracture schedule section is prepared in the air bag door opening schedule section of the aforementioned vehicle room flank material at a hinge side fracture schedule section and door opening section side at a door axis-of-rotation side. And while the vehicle room flank material attachment section to an air bag hold container is formed in one along the outside of the aforementioned opening side fracture schedule section As for the aforementioned door reinforcement member, the soma of this is united with the aforementioned vehicle room flank material. And the air bag door structure of the vehicle room flank material characterized by forming in this soma of this the hinge region which serves as the door axis of rotation along with the inside of the hinge side fracture schedule section of the aforementioned vehicle room flank material, and the hinge side attachment section to an air bag hold container is proposed.

[0010] Moreover, it sets as a means to attain the same purpose as the 2nd, in the air bag door structure where the door reinforcement member was backed by one at the rear-face side of the air bag door opening schedule section of vehicle room flank material. While the hinge side fracture schedule section is prepared in the air bag door opening schedule section of the aforementioned vehicle room flank material at least at the door axis-of-rotation side As for the aforementioned door reinforcement member, the soma of this is united with the aforementioned vehicle room flank material. to this soma of this The hinge region which serves as the door axis of rotation along with the inside of the hinge side fracture schedule section of the aforementioned vehicle room flank material, and the hinge side attachment section to an air bag hold container are formed. the door opening section side of the aforementioned air bag door opening schedule section — the outside of the opening side fracture schedule section and this opening side fracture schedule section — meeting — the reinforcement to an air bag hold container — a member — the air bag door structure of the vehicle room flank material characterized by forming the attachment section is proposed

[0011]

[Example] According to an attached drawing, this invention is explained in detail below. The cross section of the air bag door section circumference of the vehicle room flank material drawing 1 indicates an example of the 1st invention structure to be, The cross section in the

state where the 2-2 line cut drawing 2 , the decomposition perspective diagram as which drawing 3 regarded the structure from the vehicle room flank material rear-face side, The cross-sectional view by the side of the vehicle room flank material rear face in the example structure where drawing 4 is the same, the cross-sectional view by the side of the vehicle room flank material rear face in example structure where drawing 5 is another, and drawing 6 are the cross sections showing the state where the air bag door section opened wide.

[0012] The cross section of the air bag door section circumference of the vehicle room flank material drawing 7 indicates an example of the 2nd invention structure to be, The cross section in the state where eight to 8 line of drawing 7 cut drawing 8 , the decomposition perspective diagram as which drawing 9 regarded the structure from the vehicle room flank material rear-face side, Drawing of longitudinal section by the side of the vehicle room flank material rear face in the example structure where drawing 10 is the same, drawing of longitudinal section by the side of the vehicle room flank material rear face where drawing 11 similarly changed the cutting direction, The partial expanded sectional view in which drawing 12 shows the example of the hinge side fracture schedule section, the partial expanded sectional view in which drawing 13 shows the example of the opening side fracture schedule section, the cross section of the air bag door section circumference of the example of others [drawing 14], and drawing 15 are the decomposition perspective diagrams of an important section which looked at the same example structure from the vehicle room flank material rear-face side.

[0013] The 1st invention structure is explained first. The hinge side fracture schedule section (line) 21 is formed in the door axis-of-rotation side 11a, and the opening side fracture schedule section (line) 22 is formed [in / the air bag door opening schedule section 11 of the vehicle room flank material 10 / so that I may be understood by the drawing 1 row from each cross section of drawing 2 , and the decomposition perspective diagram of drawing 3] in door opening section side 11b. These hinge side fracture schedule section 21 and the opening side fracture schedule section 22 consist of fragile sites, such as the V groove or U slot established in the rear-face side of the aforementioned vehicle room flank material 10, or a slit, and as shown in drawing, they are carrying out partition formation of the configuration of the door section 12. And these fracture schedule sections 21 and 22 are fractured with the pressure at the time of air bag expansion, and are wide opened focusing on the aforementioned axis-of-rotation side 11a as the door section 12 to a vehicle room side.

[0014] In addition, with this example, like drawing 3 , although constituted by the opening side fracture schedule section 22 in which three fracture projected lines 23, 24, and 25 followed the hinge side fracture schedule section 21 of 1 which became independent about these fracture schedule sections in the shape of [of abbreviation KO] a character, the hinge side fracture schedule section 21 and the opening side fracture schedule section 22 are made to continue, and it is good also as the shape of a character of abbreviation RO (refer to drawing 5).

[0015] And in the rear face of this vehicle room flank material 10, the vehicle room flank material attachment section 40 to the air bag hold container C is formed in the outside of the aforementioned opening side fracture schedule section 22 along with this fracture schedule section 22 at one. A sign 44 is a mounting hole. In this example, like drawing 3 , this attachment section 40 forms the protruding pieces 41, 42, and 43 of the shape of three flange outside along with each aforementioned opening side fracture schedule sections 23, 24, and 25, and what each protruding pieces 41, 42, and 43 were made to continue, and was made into the shape of a character of abbreviation KO is shown.

[0016] door section 12 rear face of the aforementioned vehicle room flank material 10 — door reinforcement — a member 30 is formed an example — setting — this door reinforcement — a member 30 consists of the metal plate or plastic-molding article formed in the cross-section abbreviation L typeface as shown in drawing, and consists of a hinge region 31, this soma 32, and the attachment section 33 to the air bag hold container C In addition, although not illustrated, you may form this door reinforcement member by the flexible reticulated (network) member containing the reinforcement laying-under-the-ground section laid under the vehicle room flank material rear face by one.

[0017] A hinge region 31 is a portion which serves as the center-of-rotation shank at the time

of expansion of the door section 12, and is arranged in parallel along with this hinge side fracture schedule section 21 at the door circles side of the hinge side fracture schedule section 21 of the aforementioned vehicle room flank material 10. Moreover, this soma 32 is laid underground by one inside [rear-face] the door section 12 divided by the aforementioned hinge side fracture schedule section 21 and the opening side fracture schedule section 22, and is carrying out backing reinforcement of this door section 12. In addition, although mentioned later, as for this air bag door reinforcement section 32, it is desirable to be prepared so that the hinge side fracture schedule section 21 of the vehicle room flank material 10 and the opening side fracture schedule section 22 may be touched. moreover, the attachment section 33 is installed in one from the aforementioned hinge region 31 — having — **** — drawing 1 — like — Bolt B etc. - - this door reinforcement — a member 30 is attached in the attachment section C1 of the air bag hold container C

[0018] this door reinforcement — a member 30 is allotted as an insertion in the case of fabrication of vehicle room flank material, and can be formed in fabrication and one of vehicle room flank material moreover, door reinforcement — when a member 30 consists of a plastic-molding article, a door reinforcement member and vehicle room flank material can also be formed in simultaneous and one by the well-known double injection method In addition, the example beforehand another fabricated as insertion parts is shown by this example.

[0019] Next, the relation between said fracture schedule section and the attachment section is explained. Although drawing 4 is the cross section which looked at the structure shown in drawing 3 from the rear-face side of the vehicle room flank material 10 The attachment section 40 which consists of flange-like protruding pieces 41, 42, and 43 formed in the vehicle room flank material 10 so that I may be well understood from this drawing It is desirable in order that being formed so that the opening side fracture schedule section 22 (23, 24, 25) may be located in the inside (door section 12 side) origin section may make cleavage of the door section 12 more reliable.

[0020] moreover, reinforcement since it is completely the same — as for this soma 32 of a member 30, it is desirable to be formed so that the hinge side fracture schedule section 21 and the opening side fracture schedule section 22 (23, 24, 25) may be located in contact with the outside configuration lines 32a and 32b, respectively

[0021] Furthermore, you may form the attachment section 40 for a long time than the opening side fracture schedule section 22 (23, 24, 25). In drawing 4 , only length x is formed for a long time from the opening side fracture schedule sections 24 and 25 to which the flange-like protruding pieces 42 and 43 which constitute the attachment section 40 correspond.

[0022] In the example of drawing 4 , you may form the hinge side attachment section 47 in the outside of the hinge side fracture schedule section 21 so that it may illustrate to a pan and drawing 5 . In this case, as for the hinge side attachment section 47 which can be set, it is desirable to extend the flange-like protruding pieces 42 and 43 which constitute the aforementioned attachment section 40 like this example, and to install in one. It is for cleaving the door section 12 in the hinge side fracture schedule section 21 more effectively.

[0023] The door opening state of this example structure is illustrated by drawing 6 . As shown in drawing, from the up opening O of the air bag hold container C, the air bag A which expanded by the operation of the starting device I of air bag equipment pushes the door section 12 of the vehicle room flank material 10 open, and is developed by the vehicle interior of a room.

[0024] If it is in this invention structure on the occasion of expansion expansion of this air bag A Inside [door section 12] the hinge side fracture schedule section 21 of the vehicle room flank material 10 Along with this hinge side fracture schedule section 21, it sets at the time of expansion of the air bag door section 12. It is that in which the member 30 is formed. the hinge region 31 used as the medial-axis section and this soma 32 which is formed in this hinge region and one and carries out backing reinforcement of the air bag door section of vehicle room flank material, and the door reinforcement which is formed in a row from the aforementioned hinge region 31 at one, and has the attachment section 33 to the air bag hold container C — being certain — since — the air bag door section 12 formed in the vehicle room flank material 10 — the door reinforcement concerned — a member 30 — this reinforcement — the hinge region 31

of a member 30 is rotated as a center, and it is opened wide
[0025] On the other hand, along with this fracture schedule section 22, the attachment section 40 to the air bag hold container C is formed in this vehicle room flank material 10 and one, and door section 12 lateral part of the opening side fracture schedule section 22 of the vehicle room flank material 10 is firmly combined with the air bag hold container C by door section 12 outside of the opening side fracture schedule section 22 of the vehicle room flank material 10 by this.
[0026] however, the door section 12 of the vehicle room flank material 10 — the expansion-pressure force of an air bag A — receiving — door reinforcement, when pushed open with a member 30 Since the attachment section 33 to the air bag hold container C in the hinge region material 30 and the vehicle room flank material 10 and 44 portions are firmly combined with the air bag hold container C concerned The stress accompanying expansion of an air bag A concentrates on the hinge side fracture schedule section 21 which is a fragile site prepared near these attachment sections 33 and 44, and the opening side fracture schedule section 22 effectively. By concentration of this stress, the door section 12 fractures certainly the hinge region 31 of the aforementioned hinge region material 30 as a center like drawing 4 along with these hinge side fracture schedule sections 21 and the opening side fracture schedule section 22.
[0027] Next, the 2nd invention structure is explained according to drawing 7 or drawing 15 . the 2nd structure attains the same purpose as the 1st aforementioned invention, and showed it to drawing 7 or drawing 9 — as — the rear-face side of the air bag door opening schedule section 51 of the vehicle room flank material 50 — door reinforcement — the air bag door structure where the member 60 was backed by one — setting — the following vehicle room flank material 50 and door reinforcement — it has the feature of a member 60
[0028] First, the hinge side fracture schedule section 55 is formed in door axis-of-rotation side 51a at least at the air bag door opening schedule section 51 of the vehicle room flank material 50. Sign 51b of drawing expresses a door release section side, and 52 shows the door (schedule) section and the door section from which chain-line sign 52A was released.
[0029] on the other hand — door reinforcement — the soma 62 of this unites a member 60 with the aforementioned vehicle room flank material 50 — having — **** — and — this soma 62 of this — hinge region 61 row — the hinge side attachment section 63 and opening side fracture schedule section 72 (73, 74, 75) row — reinforcement — a member — the attachment section 64 (65, 66, 67) is formed door reinforcement — the hinge region 61 of a member 60 serves as the door axis of rotation at the time of release of the air bag door section 52, and as described above, as shown in the cross section of drawing 10 , it is formed along with the inside of the hinge side fracture schedule section 55 of the aforementioned vehicle room flank material 50 And the hinge side attachment section 63 to the air bag hold container C is formed in one from this hinge region 61. In addition, the sign 78 of drawing is a mounting hole and it is the same as that of the above that it is what is attached in the attachment section C1 of the air bag hold container C with Bolt B etc.
[0030] moreover, door reinforcement — the release side fracture schedule section 72 (73, 74, 75) of a member 60 is formed in the shape of an abbreviation KO character of the three fracture schedule sections (line) 73, 74, and 75 along with door opening section side 51b of the air bag door opening schedule section 51 of the vehicle room flank material 50 so that I may be well understood from drawing 9 and — these fracture schedule sections (line) 73, 74, and 75 — drawing 11 — like — the outside — meeting — the reinforcement to the air bag hold container C — a member — the attachment section 64 (65, 66, 67) corresponds, respectively, and is formed in addition, drawing — like — door reinforcement — the release side fracture schedule section 72 (73, 74, 75) of a member 60 — reinforcement — a member — it is desirable when making it located in the fundamental circles side of the attachment section 64 (65, 66, 67) ensures the fracture The sign 79 of drawing is a mounting hole and is attached in the attachment section C2 of the air bag hold container C with Bolt B etc.
[0031] here — the vehicle room flank material 50 and door reinforcement — if a relation with a member 60 is described a little — drawing 12 (A) and (B) — like — the hinge side fracture schedule sections 55A and 55B of the aforementioned vehicle room flank material 50 — door

reinforcement — it is desirable to prepare so that it may be located in the fundamental outside side of the hinge side attachment section 63 in which the hinge 61 of a member 60 was formed Moreover, these hinge side fracture schedule sections 55A and 55B will not ask configurations, such as U slot with a V groove or width of face, and structure, if it is the thin-walled part which can be fractured so that it may be illustrated.

[0032] Furthermore, you may form in the vehicle room flank material 50 the vehicle room flank material release side fracture schedule section 56 of the thin meat which can be fractured like drawing 13 . in this case, this vehicle room flank material release side fracture schedule section 56 — door reinforcement — it is formed corresponding to the release side fracture schedule section 72 (73, 74, 75) of a member 60

[0033] Drawing 14 or drawing 16 requires the air bag door section 102 of the vehicle room flank material 100 for the door structure of a double door, and this door section 102 is released from the central fracture schedule section 125 by both sides like the chain lines 102A and 102B of drawing 14 . With this double door structure, as shown in drawing 15 , it will exist in the both sides which the door axis-of-rotation section sides 101a and 101a of the air bag opening schedule section 101 of the vehicle room flank material 100 counter. Sign 101b is a door release section side. Therefore, the two hinge side fracture schedule sections 105,106 of the vehicle room flank material 100 are formed along the outside by the side of [101a and 101a] the door axis-of-rotation section of this air bag opening schedule section 101 that counters.

[0034] the same — door reinforcement — every two hinge side attachment sections 114,115 are also formed in the hinge region 111,112 row used as the door axis of rotation of a member 110 corresponding to this and the aforementioned hinge region 111,112 row — the both sides of the hinge side attachment section 114,115 — release section side fracture schedule section 122 (123,124) row — reinforcement — a member — the attachment section 116 (117,118) is formed, respectively In addition, a sign 125 is the fracture schedule section of the center of the door book soma 113 formed so that it might reach in the center mostly at the release section side fracture schedule section 122 (123,124) of both sides. In this example, the fracture schedule section becomes H character-like. In addition, about the structure of this example, it is the same as that of the above-mentioned.

[0035] next, the vehicle room flank material used here and door reinforcement — reference is made about the quality of the material of a member Generally, the two-layer structure object of the resin which constitutes vehicle room flank material for the air bag door section, and the resin which constitutes a door reinforcement member arranges in a mold the reinforcement member fabricated beforehand at the time of fabrication of vehicle room flank material, and it unites with vehicle room flank material, or it is acquired by the so-called double injection fabrication which carries out injection molding of a reinforcement member and the vehicle room flank material which has the air bag door section simultaneously.

[0036] However, when it considers as such structure, the physical properties stated to the resin material of each class used below are required. It is the bond strength of the resin material which constitutes vehicle room flank material in the first place, and the resin material which constitutes a reinforcement member first. Moreover, you have to have the rigidity which does not deform easily even if it receives the shearing force of the melting resin with which the reinforcement member arranged in a mold fabricates the general surface of vehicle room flank material, in order not to spoil the moldability of vehicle room flank material, when using a reinforcement member for the second as an insertion at the time of vehicle room flank material fabrication. Furthermore, it is that the resin material which constitutes both layers in the third has few differences of the elongation property over stress. This is because one layer cannot follow in footsteps of the deformation, but remarkable destruction may be produced and a fragment etc. may disperse, when the air bag door section deforms in response to expansion of an air bag, when a big difference is in the elongation of each resin material of a bilayer.

[0037] Furthermore, with the resin material by the side of vehicle room flank material, at the time of expansion of the air bag door section, high thermal resistance is needed so that deformation etc. may not be produced corresponding to the deformation by the temperature rise rigid [which prevent a crack etc. / the sufficient elongation and rigid / sufficient], and vehicle

indoor. moreover, reinforcement — a member — the impact strength which is equal to use at low temperature is required of a near resin material

[0038] Now, the main resin material used as vehicle room flank material has a polypropylene regin (front Naka PP), a denaturation polyphenylene oxide (front Naka denaturation PPO), a glass fiber strengthening acrylonitrile styrene copolymer (front Naka ASG), etc. Moreover, the polymer alloy (front Naka PA/PPO) of others, a polyphenylene oxide, and 6-nylon etc. is used for the resin material used as a door reinforcement member. [thermoplastic elastomer /, such as an olefin system elastomer (front Naka TPO), a styrene system elastomer (front Naka TPS), and a polyester system elastomer (front Naka TPEE),] This invention persons examined the adhesive property about the resins of these various kinds which have physical properties suitable as vehicle room flank material or an air bag door. A result is shown in the following tables.

[0039]

		車室側部材		
		PP系	変性PPO	ASG
ドア補強部材	TPO	◎	×	×
	TPS	△	○	△
	TPEE	×	×	×
	PA/PPO	×	×	△

[0040] Consequently, the combination of PP system resin and a TPO system resin found out demonstrating the best adhesive property. and the case where the aforementioned resin which has predetermined physical properties is combined when the vehicle room flank material which has the air bag door section using these resins was constituted and being inquired further — the adhesive property of both layers — good — a moldability — excelling — an impact strength good [having high rigidity and a high heat deflection temperature moreover / at the time of low temperature] — it found out demonstrating the physical properties which were excellent also to any

[0041] namely, vehicle room flank material and door reinforcement — the desirable combination of the quality of the material of a member is as follows

Vehicle room flank material: The **** elongation of JIS-K7113 is larger than 300%, and the bending elastics modulus of JIS-K7203 are 20000 kgf/cm2. That from which it is large, the heat deflection temperature of JIS-K7207 is larger than 120 degrees C, and the eye ZODDO impact strength (23 degrees C) of JIS-K7110 is constituted from 15 kg-cm/cm by the large polypropylene regin.

Door reinforcement member: The bending elastics modulus of JIS-K7203 are 3000 kgf/cm2. That from which it is large and the eye ZODDO impact strength (-40 degrees C) of JIS-K7110 is constituted from 20 kg-cm/cm by the large olefin system elastomer.

[0042] this vehicle room flank material and door reinforcement, although it was difficult the appearance of vehicle room flank material not only to become very good, but to fill all physical properties required for vehicle room flank material and an air bag door portion with a monolayer conventionally according to the combination structure of a member, since the air bag door section was formed in the general surface and one considering as such the two-layer structure -- vehicle room flank material and door reinforcement — the physical properties of a member complement each other, respectively, and can hold physical properties required for vehicle room flank material and the air bag door section as a whole

[0043] Furthermore, since vehicle room flank material is constituted from a polypropylene regin and the olefin system elastomer constitutes the door reinforcement member, as mentioned above, both adhesive property is very good and forming precision and efficiency are very good. And since all of vehicle room flank material and a door reinforcement member consist of a resin, it is lightweight and becomes easy to do attachment.

[0044] moreover, the case where the air bag door section deforms by air bag expansion when the **** elongation of JIS-K7113 makes size the physical properties of the polypropylene regin which constitutes vehicle room flank material from 300% — air bag door reinforcement — as deformation of vehicle room flank material can be made to be able to follow in footsteps to deformation of a member and opening, the breakage by the side of vehicle room flank material can be prevented, and crew can be taken care of And on the occasion of expansion of the air bag door section at the time of ordinary temperature, the crack of vehicle room flank material can be prevented by making the eye ZODDO impact strength (23 degrees C) of JIS-K7110 larger than 15 kg-cm/cm. Moreover, it is the bending elastic modulus of JIS-K7203 20000 kgf/cm2 By considering as size, sufficient configuration maintenance nature for vehicle room flank material can be given. Furthermore, producing deformation is lost even when vehicle room flank material becomes an elevated temperature by direct rays on the occasions at the time of summer parking etc. by making the heat deflection temperature of JIS-K7207 into size from 120 degrees C.

[0045] Furthermore, the bending elastics modulus of JIS-K7203 are the physical properties of the olefin system elastomer which constitutes a door reinforcement member 3000 kgf/cm2 By considering as size By being able to give the self-configuration maintenance nature to the shearing force of the melting resin at the time of vehicle room flank material fabrication to a door reinforcement member, and making the eye ZODDO impact strength (-40 degrees C) of JIS-K7110 into size from 20 kg-cm/cm It is prevented that the attachment section to an air bag case is damaged at the time of the air bag expansion at the time of low temperature.

[0046] In addition, as a polypropylene regin used for vehicle room flank material, especially if the aforementioned physical properties are fulfilled, it is not restricted, and you may blend other thermoplastics, fillers, etc. of a proper quantity. Moreover, as an olefin system elastomer used for a door reinforcement member, there is a blend object of polypropylene and ethylene-propylene copolymerization rubber or a thing which performed dynamic vulcanization at the time of a blend. Moreover, the additive of the grade which does not spoil predetermined physical properties can be suitably added to the aforementioned polypropylene regin and an olefin system elastomer. As an additive, reinforcing materials, such as an antioxidant, an ultraviolet ray absorbent, a fluid improvement agent, talc, and a fiber, etc. are mentioned.

[0047]

[Effect of the Invention] In the air bag door structure where the door reinforcement member was backed by one at the rear-face side of the air bag door opening schedule section of vehicle room flank material according to the structure of this invention as it illustrated above and having been explained The hinge side attachment section to an air bag hold container is formed in the hinge region of a member. the hinge side fracture schedule section prepares in the door axis-of-rotation side of vehicle room flank material — having — door reinforcement — And since the vehicle room flank material attachment section to an air bag hold container is formed in one along the outside of the opening side fracture schedule section of vehicle room flank material (the 1st structure) or a door reinforcement member (the 2nd structure) The door opening schedule section circumference of vehicle room flank material is firmly reinforced by the attachment section to an air bag hold container, and concentrates certainly [the pressure of air bag expansion / the fracture schedule section], and effectively by it. Therefore, opening of the door section is performed certainly and very smoothly. Moreover, it is lost that cleavage of the air bag door section attains to portions other than the fracture schedule section. Furthermore, since the fracture schedule section which divides the air bag door section is prepared in vehicle room flank material at one, the appearance nature of a product becomes good.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the cross section of the air bag door section circumference of the vehicle room flank material which shows an example of the 1st invention structure.
[Drawing 2] It is a cross section in the state where two to 2 line of drawing 1 cut.
[Drawing 3] It is the decomposition perspective diagram which looked at the structure of drawing 1 from the vehicle room flank material rear-face side.
[Drawing 4] It is a cross-sectional view by the side of the vehicle room flank material rear face in the same example structure.
[Drawing 5] It is a cross-sectional view by the side of the vehicle room flank material rear face in another example structure.
[Drawing 6] It is the cross section showing the state where the air bag door section opened wide.
[Drawing 7] It is the cross section of the air bag door section circumference of the vehicle room flank material which shows an example of the 2nd invention structure.
[Drawing 8] It is a cross section in the state where eight to 8 line of drawing 7 cut.
[Drawing 9] It is the decomposition perspective diagram which looked at the structure of drawing 1 from the vehicle room flank material rear-face side.
[Drawing 10] It is drawing of longitudinal section by the side of the vehicle room flank material rear face in the same example structure.
[Drawing 11] It is drawing of longitudinal section by the side of the vehicle room flank material rear face which similarly changed the cutting direction.
[Drawing 12] It is the partial expanded sectional view showing the example of the hinge side fracture schedule section.
[Drawing 13] It is the partial expanded sectional view showing the example of the opening side fracture schedule section.
[Drawing 14] It is the cross section of the air bag door section circumference of other examples.

[Drawing 15] It is the decomposition perspective diagram of an important section which looked at the same example structure from the vehicle room flank material rear-face side.
[Drawing 16] It is drawing of longitudinal section by the side of the vehicle room flank material rear face in the structure of drawing 14 .
[Drawing 17] It is the cross section of the air bag door section circumference in structure conventionally.
[Drawing 18] It is a cross section in the state where 18 to 18 line of drawing 17 cut.
[Drawing 19] It is the schematic diagram showing an example of the open state of the air bag door section in structure conventionally.
[Drawing 20] It is the schematic diagram showing other examples of the open state of the air bag door section in structure conventionally.
[Drawing 21] It is the cross section showing an example of the fracture schedule section of structure conventionally.
[Drawing 22] It is the cross section showing the state where the pressure joined the door

section in the example of drawing 21 .
[Drawing 23] It is the cross section showing the state at the time of similarly the door section opening in the example of drawing 21 .
[Description of Notations]
10 Vehicle Room Flank Material
11 Air Bag Door Opening Schedule Section
11a Door axis of rotation
11b Door opening section side
12 Door Section
21 Hinge Side Fracture Schedule Section
22 (23, 24, 25) Opening side fracture schedule section
30 Door Reinforcement — Member
31 Hinge Region
32 This Soma
33 Hinge Side Attachment Section
40 (41, 42, 43) Vehicle room flank material attachment section
50 Vehicle Room Flank Material
51 Air Bag Door Opening Schedule Section
52 Door Section
55 Hinge Side Fracture Schedule Section
56 Opening Side Fracture Schedule Section
60 Door Reinforcement — Member
61 Hinge Region
62 This Soma
63 Hinge Side Attachment Section
64 (65, 66, 67) reinforcement — a member — the attachment section
72 (73, 74, 75) Opening side fracture schedule section
100 Vehicle Room Flank Material
101 Air Bag Door Opening Schedule Section
102 Door Section
105 Hinge Side Fracture Schedule Section
110 Door Reinforcement — Member
111,112 Hinge region
113 This Soma
114,115 Hinge side attachment section
116 (117,118) reinforcement — a member — the attachment section
122 (123,124) Opening side fracture schedule section
125 Central-Site Fracture Schedule Section
A Air bag
C Air bag hold container

[Translation done.]

* NOTICES *

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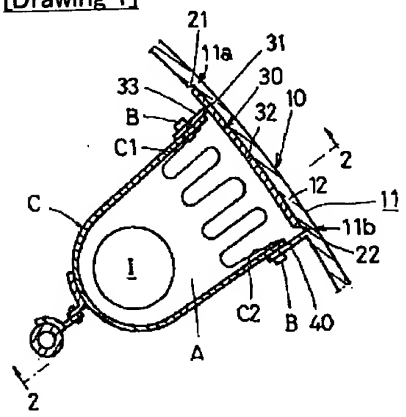
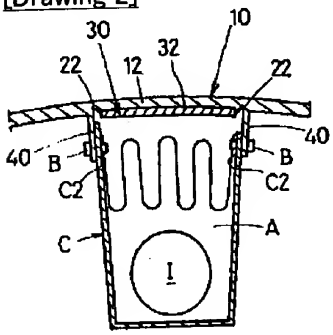
DRAWINGS

[Drawing 1]



[Drawing 2]



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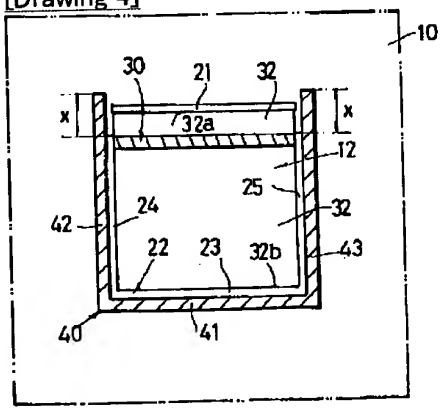

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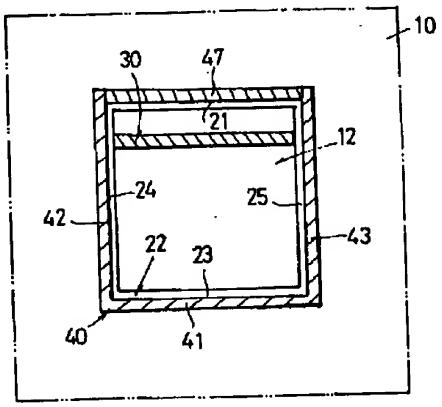

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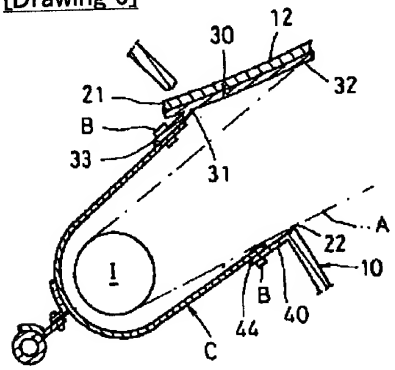
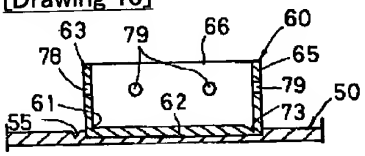


[Drawing 10]



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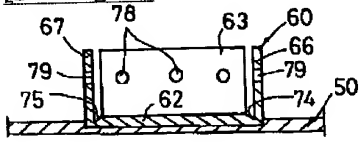

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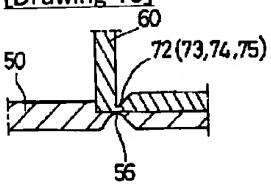

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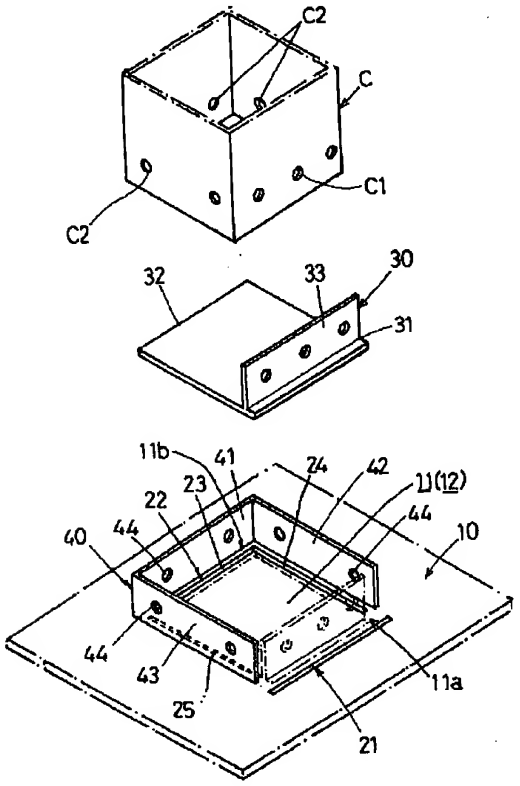

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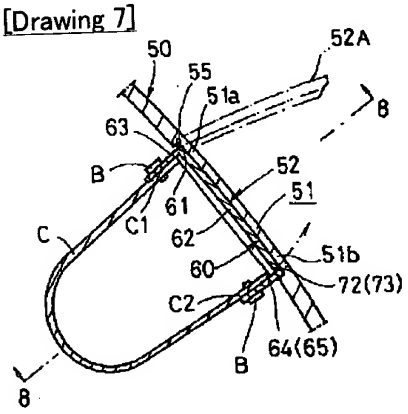

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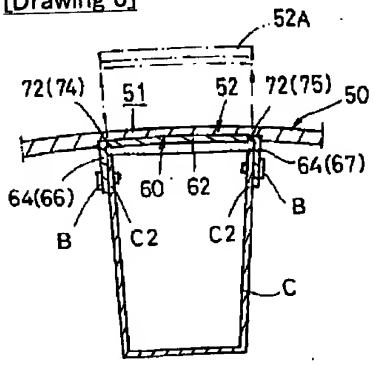

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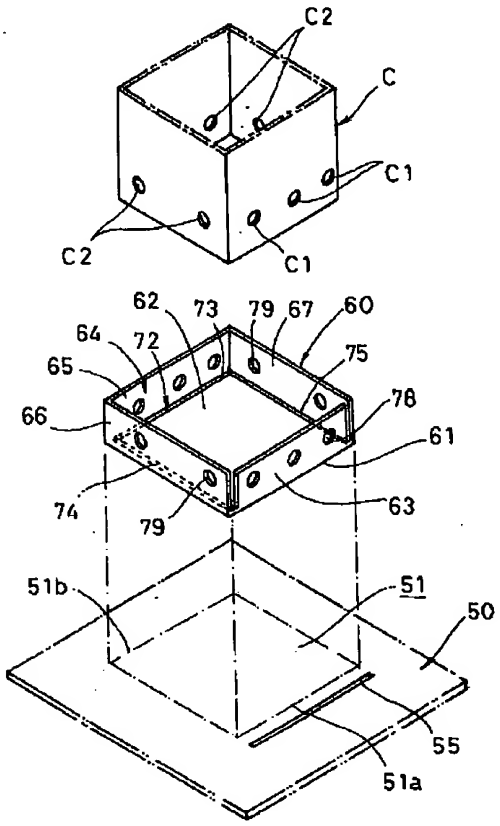

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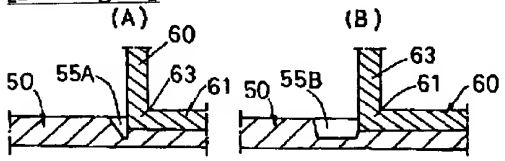

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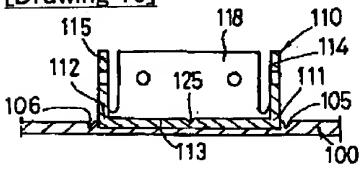

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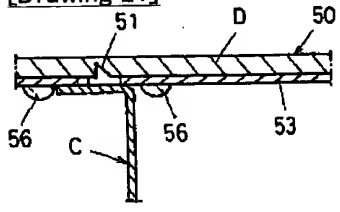

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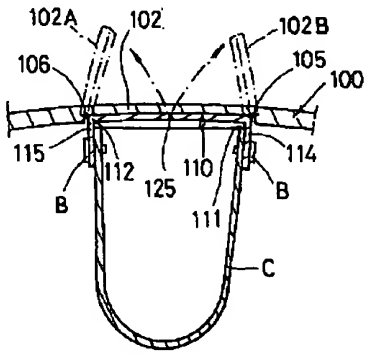

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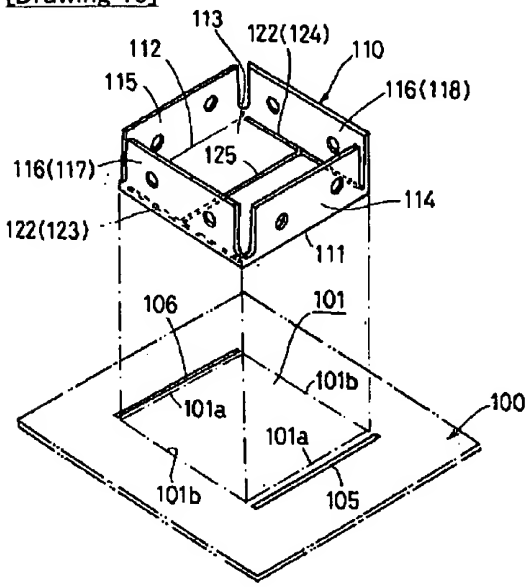

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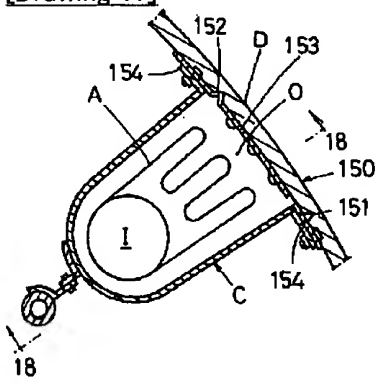

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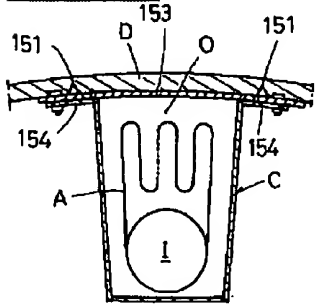

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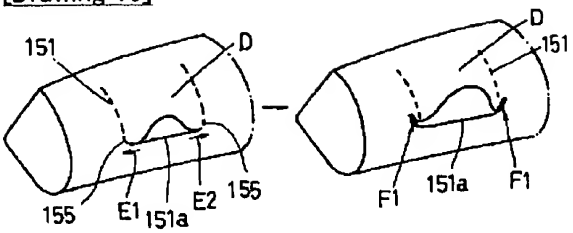

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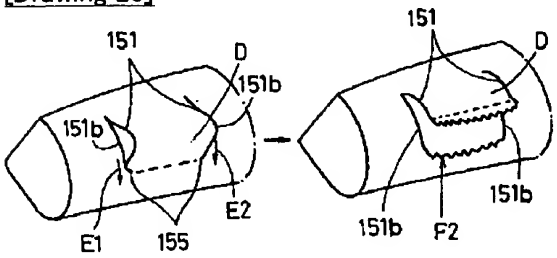

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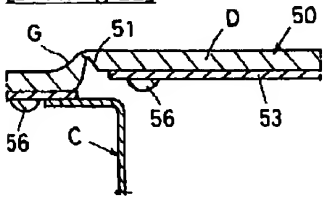
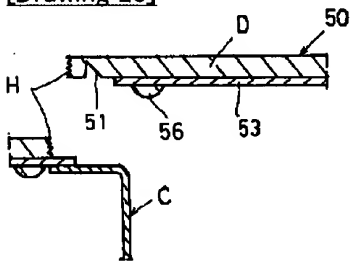


[Drawing 23]



[Translation done.]

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(43)公開日　平成９年(1997)２月25日

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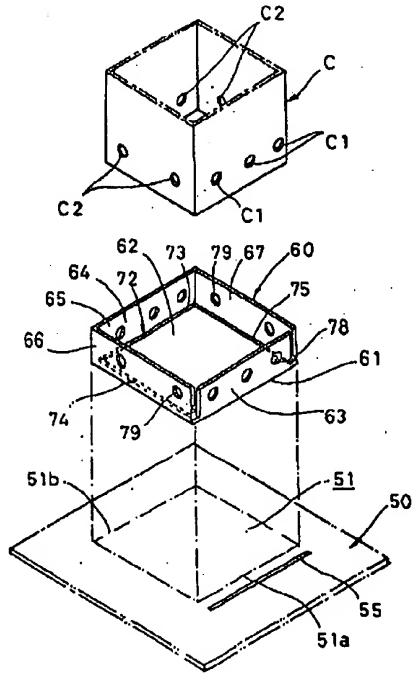
最終頁に続く

(54)【発明の名称】　車室側部材のエアバッグドア構造

(57)【要約】
【課題】　外観良好で、しかもエアバッグ膨張の際にはエアバッグドア部の開裂が破断予定部以外の部分に及ぶことなく、エアバッグドア部の破断予定部を確実に開裂させることができる車室側部材のエアバッグドア構造を提供する。
【解決手段】　車室側部材５０のエアバッグドア開口予定部５１には少なくともドア回転軸側５１ａにヒンジ側破断予定部５５が設けられているとともに、ドア補強部材６０はその本体部６１が前記車室側部材と一体化されていて、かつ該本体部には、前記車室側部材のヒンジ側破断予定部の内側に沿ってドア回転軸となるヒンジ部６１およびエアバッグ収容容器へのヒンジ側取付部６３が形成され、前記エアバッグドア開口予定部のドア開放部側５１ｂには開放側破断予定部７２（７３，７４，７５）と該開放側破断予定部の外側に沿ってエアバッグ収容容器への補強部材取付部６４（６５，６６，６７）が形成されている。



【特許請求の範囲】

【請求項１】　車室側部材のエアバッグドア開口予定部の裏面側にドア補強部材が一体に裏打ちされたエアバッグドア構造において、

前記車室側部材のエアバッグドア開口予定部にはドア回転軸側にヒンジ側破断予定部およびドア開放部側に開放側破断予定部が設けられ、かつ前記開放側破断予定部の外側に沿ってエアバッグ収容容器への車室側部材取付部が一体に形成されているとともに、

前記ドア補強部材はその本体部が前記車室側部材と一体化されていて、かつ該本体部には前記車室側部材のヒンジ側破断予定部の内側に沿ってドア回転軸となるヒンジ部とエアバッグ収容容器へのヒンジ側取付部が形成されていることを特徴とする車室側部材のエアバッグドア構造。

【請求項２】　請求項１において、前記車室側部材の開放側破断予定部が車室部材取付部の根本部内側に位置する車室側部材のエアバッグドア構造。

【請求項３】　請求項１または２において、前記車室側部材取付部の長さが前記開放側破断予定部の長さより長く形成された車室側部材のエアバッグドア構造。

【請求項４】　車室側部材のエアバッグドア開口予定部の裏面側にドア補強部材が一体に裏打ちされたエアバッグドア構造において、

前記車室側部材のエアバッグドア開口予定部には少なくともドア回転軸側にヒンジ側破断予定部が設けられているとともに、

前記ドア補強部材はその本体部が前記車室側部材と一体化されていて、かつ該本体部には、前記車室側部材のヒンジ側破断予定部の内側に沿ってドア回転軸となるヒンジ部およびエアバッグ収容容器へのヒンジ側取付部が形成され、前記エアバッグドア開口予定部のドア開放部側には開放側破断予定部と該開放側破断予定部の外側に沿ってエアバッグ収容容器への補強部材取付部が形成されていることを特徴とする車室側部材のエアバッグドア構造。

【請求項５】　請求項４において、前記ドア補強部材の開放側破断予定部が補強部材取付部の根本部内側に位置する車室側部材のエアバッグドア構造。

【請求項６】　請求項４または５において、前記ドア車室側部材のヒンジ側破断予定部が補強部材のヒンジ側取付部の根本部外側に位置する車室側部材のエアバッグドア構造。

【請求項７】　請求項４ないし６のいずれかにおいて、前記車室側部材のエアバッグドア開口予定部のドア開放部側に破断可能な車室側部材開放側破断予定部が形成された車室側部材のエアバッグドア構造。

【請求項８】　請求項４ないし７のいずれかにおいて、前記車室側部材とドア補強部材の材質が次の組合わせよりなる車室側部材のエアバッグドア構造。

車室側部材：ＪＩＳ－Ｋ７１１３の引張伸びが３００％より大きく、ＪＩＳ－Ｋ７２０３の曲げ弾性率が２０００ｋｇｆ／ｃｍ² より大きく、ＪＩＳ－Ｋ７２０７の熱変形温度が１２０℃より大きく、ＪＩＳ－Ｋ７１１０のアイゾッド衝撃強度（２３℃）が１５ｋｇ・ｃｍ／ｃｍより大きいポリプロピレン系樹脂、

ドア補強部材：ＪＩＳ－Ｋ７２０３の曲げ弾性率が３０００ｋｇｆ／ｃｍ² より大きく、ＪＩＳ－Ｋ７１１０のアイゾッド衝撃強度（－４０℃）が２０ｋｇ・ｃｍ／ｃｍより大きいオレフィン系エラストマー。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】この発明は自動車の車室側部材、例えばインストルメントパネルにおけるエアバッグドア構造に関し、特には車室側部材のエアバッグドア開口予定部の裏面側にドア補強部材が一体に裏打ちされたエアバッグドア構造に関する。

【０００２】

【従来の技術】自動車の助手席側に設けられるエアバッグ装置は、添付の図面の図１７および図１８に示すように、折り畳まれたエアバッグＡがエアバッグ収容容器Ｃ内にエアバッグ作動部材（インフレータ）Ｉとともに収容されて、助手席前面の車室側部材であるインストルメントパネル１５０内側に格納されている。このエアバッグ収容容器Ｃの上部はエアバッグＡが車室内に展開するための開口部Ｏとして構成され、その外周には車室側部材１５０への取付部１５４が設けられている。そして、このエアバッグ収容容器Ｃは取付部１５４を介して車室側部材１５０の裏面に固定され、その開口部Ｏは該車室側部材１５０に一体に形成されたエアバッグドア部Ｄによって覆われる。

【０００３】車室側部材１５０のエアバッグドア部Ｄは、該車室側部材１５０にＶ溝やスリットなどの脆弱部よりなる破断予定部５１を略コ字状またはロ字状に形成することによってその一般部分と一体に区画形成されている。そして、該破断予定部１５１によって区画されたエアバッグドア部Ｄの裏面側にはヒンジ部１５２を有するアルミ板や鉄板などのドア補強部材１５３が一体に裏打ちされている。

【０００４】このような構成よりなるエアバッグ装置は、一旦自動車が大きな衝撃を受けた時には前記作動装置Ｉが作動してエアバッグＡが瞬時に膨張することにより、エアバッグドア部Ｄが内側から押圧されて前記破断予定部１５１が開裂し、ヒンジ部１５２を介してエアバッグドア部Ｄが開口する。エアバッグＡは前記開口部Ｏから車室内に展開する。

【０００５】この構造にあっては、車室側部材１５０にエアバッグドア部Ｄが一体に形成されているので、エアバッグドア部を別成形して取り付ける形式のものに比して、外観性が良好となる利点がある。しかしながら、そ

の反面、図１９および図２０に示すように、例えば破断予定部１５１が図のような略コの字状である場合には、開裂時に破断予定部１５１のコーナー部分１５５などで横（左右）方向の開裂１５１ａと縦（前後）方向の開裂１５１ｂの伝達がスムーズにいかずその開裂方向Ｅ１，Ｅ２の車室側部材に食い込むため、該食い込み部Ｆ１，Ｆ２によってドア部Ｄの展開に抵抗を生ずることがことがある。

【０００６】特に、前記エアバッグドア部Ｄのヒンジ部１５２側にあってはその周辺がドア補強材１５３により補強されているが、ドア開口部側となる破断予定部１５１外周の車室側部材は補強されていないので、該破断予定部１５１以外の部分で開裂が生じやすい。

【０００７】また、図２１に示されるように、エアバッグドア部Ｄはドア補強材１５３によって裏打ちされているのであるが、この補強材１５３は、車室側部材１５０のエアバッグドア部Ｄ裏面にボス１５６を設け該ボス１５６を補強材１５３を介して熱カシメすることにより、車室側部材１５０裏面に一体に固定されるのが一般的である。そのため、脆弱な破断予定部１５１が熱による影響を受けないように、前記ボス１５６と破断予定部１５１とをなるべく離して設けることが望ましい。しかしながら、この場合、エアバッグドア部Ｄの開放の際に、前記破断予定部１５１がボス１５６に引っ張られて、エアバッグドア部に図２２のような曲がりＧが生じ、図２３の符号Ｈのように破断予定部１５１以外で開裂するおそれがある。

【０００８】

【発明が解決しようとする課題】この発明はこのような問題点を解決するために提案されたものであって、外観良好で、しかもエアバッグ膨張の際にはエアバッグドア部の開裂が破断予定部以外の部分に及ぶことなく、エアバッグドア部の破断予定部を確実に開裂させることができる車室側部材のエアバッグドア構造を提供しようとするものである。

【０００９】

【課題を解決するための手段】すなわち、前記の目的を達成する手段として、第１に、車室側部材のエアバッグドア開口予定部の裏面側にドア補強部材が一体に裏打ちされたエアバッグドア構造において、前記車室側部材のエアバッグドア開口予定部にはドア回転軸側にヒンジ側破断予定部およびドア開放部側に開放側破断予定部が設けられ、かつ前記開放側破断予定部の外側に沿ってエアバッグ収容容器への車室側部材取付部が一体に形成されているとともに、前記ドア補強部材はその本体部が前記車室側部材と一体化されていて、かつ該本体部には前記車室側部材のヒンジ側破断予定部の内側に沿ってドア回転軸となるヒンジ部とエアバッグ収容容器へのヒンジ側取付部が形成されていることを特徴とする車室側部材のエアバッグドア構造を提案するものである。

【００１０】また、第２に、同じ目的を達成する手段として、車室側部材のエアバッグドア開口予定部の裏面側にドア補強部材が一体に裏打ちされたエアバッグドア構造において、前記車室側部材のエアバッグドア開口予定部には少なくともドア回転軸側にヒンジ側破断予定部が設けられているとともに、前記ドア補強部材はその本体部が前記車室側部材と一体化されていて、かつ該本体部には、前記車室側部材のヒンジ側破断予定部の内側に沿ってドア回転軸となるヒンジ部およびエアバッグ収容容器へのヒンジ側取付部が形成され、前記エアバッグドア開口予定部のドア開放部側には開放側破断予定部と該開放側破断予定部の外側に沿ってエアバッグ収容容器への補強部材取付部が形成されていることを特徴とする車室側部材のエアバッグドア構造を提案するものである。

【００１１】

【実施例】以下添付の図面に従ってこの発明を詳細に説明する。図１は第１の発明構造の一例を示す車室側部材のエアバッグドア部周辺の断面図、図２はその２－２線で切断した状態の断面図、図３はその構造を車室側部材裏面側から見た分解斜視図、図４は同じ実施例構造における車室側部材裏面側の横断面図、図５は別の実施例構造における車室側部材裏面側の横断面図、図６はエアバッグドア部が開放した状態を示す断面図である。

【００１２】図７は第２の発明構造の一例を示す車室側部材のエアバッグドア部周辺の断面図、図８は図７の８－８線で切断した状態の断面図、図９はその構造を車室側部材裏面側から見た分解斜視図、図１０は同じ実施例構造における車室側部材裏面側の縦断面図、図１１は同じく切断方向を変えた車室側部材裏面側の縦断面図、図１２はヒンジ側破断予定部の例を示す部分拡大断面図、図１３は開放側破断予定部の例を示す部分拡大断面図、図１４は他の実施例のエアバッグドア部周辺の断面図、図１５は同じ実施例構造を車室側部材裏面側から見た要部の分解斜視図である。

【００１３】まず第１の発明構造について説明する。図１ならびに図２の各断面図および図３の分解斜視図から理解されるように、車室側部材１０のエアバッグドア開口予定部１１において、そのドア回転軸側１１ａにはヒンジ側破断予定部（線）２１が、ドア開放部側１１ｂには開放側破断予定部（線）２２が設けられている。これらヒンジ側破断予定部２１および開放側破断予定部２２は、前記車室側部材１０の裏面側に設けられたＶ溝またはＵ溝あるいはスリットなどの脆弱部よりなり、図のようにドア部１２の形状を区画形成している。そして、これらの破断予定部２１，２２はエアバッグ膨張時にはその圧力により破断し、ドア部１２として前記回転軸側１１ａを中心に車室側へ開放される。

【００１４】なお、本実施例では、図３のように、これらの破断予定部を独立した一のヒンジ側破断予定部２１と三本の破断予定線２３，２４，２５が略コの字状に連

続した開放側破断予定部２２とによって構成しているが、ヒンジ側破断予定部２１と開放側破断予定部２２とを連続させて略ロの字状（図５参照）としてもよい。

【００１５】そして、この車室側部材１０の裏面において、前記開放側破断予定部２２の外側には、該破断予定部２２に沿って、エアバッグ収容容器Ｃへの車室側部材取付部４０が一体に形成されている。符号４４は取付孔である。この実施例においては、図３のように、この取付部４０は、前記各開放側破断予定部２３，２４，２５に沿って外側に三つのフランジ状の突片４１，４２，４３を設け、各突片４１，４２，４３を連続させて略コの字状としたものが示される。

【００１６】前記車室側部材１０のドア部１２裏面にはドア補強部材３０が設けられる。実施例において、このドア補強部材３０は図のような断面略Ｌ字形に形成された金属板またはプラスチック成形品よりなり、ヒンジ部３１と本体部３２とエアバッグ収容容器Ｃへの取付部３３とから構成されている。なお、図示しないが、このドア補強部材は車室側部材裏面に一体に埋設される補強埋設部を含む可撓性網状（ネット）部材によって形成してもよい。

【００１７】ヒンジ部３１は、ドア部１２の展開時にその回転中心軸部となる部分であって、前記車室側部材１０のヒンジ側破断予定部２１のドア部内側に、該ヒンジ側破断予定部２１に沿って平行に配置される。また、本体部３２は、前記ヒンジ側破断予定部２１および開放側破断予定部２２によって区画されたドア部１２の裏面内側に一体に埋設され該ドア部１２を裏打ち補強している。なお、後述するが、このエアバッグドア補強部３２は車室側部材１０のヒンジ側破断予定部２１と開放側破断予定部２２に接するように設けられるのが望ましい。また、取付部３３は、前記ヒンジ部３１から一体に延設されており、図１のように、ボルトＢなどによって該ドア補強部材３０をエアバッグ収容容器Ｃの取付部Ｃ１に取り付けるようになっている。

【００１８】このドア補強部材３０は、車室側部材の成形の際にインサートとして配されて車室側部材の成形と一体に形成することができる。また、ドア補強部材３０がプラスチック成形品よりなる場合には、公知のダブルインジェクション法によってドア補強部材と車室側部材とを同時かつ一体に形成することもできる。なお、本実施例では、あらかじめインサート部品として別成形した例が示される。

【００１９】次に、前記した破断予定部と取付部の関係について説明する。図４は図３に示す構造を車室側部材１０の裏面側から見た断面図であるが、この図からよく理解されるように、車室側部材１０に形成されるフランジ状突片４１，４２，４３からなる取付部４０は、その内側（ドア部１２側）根本部に開放側破断予定部２２（２３，２４，２５）が位置するように形成されることが、ドア部１２の開裂をより確実にするために、望ましい。

【００２０】また全く同じ理由から、補強部材３０の本体部３２は、その外側形状線３２ａ，３２ｂに接してヒンジ側破断予定部２１および開放側破断予定部２２（２３，２４，２５）がそれぞれ位置するように形成されることが、望ましい。

【００２１】さらに、取付部４０は開放側破断予定部２２（２３，２４，２５）より長く形成してもよい。図４では、取付部４０を構成するフランジ状突片４２および４３が対応する開放側破断予定部２４，２５より長さｘだけ長く形成されている。

【００２２】さらまた、図５に図示するように、図４の例において、ヒンジ側破断予定部２１の外側にヒンジ側取付部４７を形成してもよい。この場合におけるヒンジ側取付部４７は、この例のように、前記取付部４０を構成するフランジ状突片４２および４３を延長して一体に延設することが好ましい。ヒンジ側破断予定部２１におけるドア部１２の開裂をより効果的に行うためである。

【００２３】この実施例構造のドア開放状態が図６に図示される。図のように、エアバッグ装置の作動装置Ｉの作動によって膨張したエアバッグＡはエアバッグ収容容器Ｃの上部開口部Ｏより車室側部材１０のドア部１２を押し開け車室内に展開される。

【００２４】このエアバッグＡの膨張展開に際して、この発明構造にあっては、車室側部材１０のヒンジ側破断予定部２１のドア部１２内側に、該ヒンジ側破断予定部２１に沿ってエアバッグドア部１２の展開時において中心軸部となるヒンジ部３１、および該ヒンジ部と一体に形成され車室側部材のエアバッグドア部を裏打ち補強する本体部３２、ならびに前記ヒンジ部３１より一体に形成されエアバッグ収容容器Ｃへの取付部３３を有するドア補強部材３０が設けられているものであるから、車室側部材１０に形成されたエアバッグドア部１２は当該ドア補強部材３０とともに、該補強部材３０のヒンジ部３１を中心として回転し、開放される。

【００２５】一方、車室側部材１０の開放側破断予定部２２のドア部１２外側には、該破断予定部２２に沿ってエアバッグ収容容器Ｃへの取付部４０が該車室側部材１０と一体に形成されており、これによって車室側部材１０の開放側破断予定部２２のドア部１２外側部分がエアバッグ収容容器Ｃと強固に結合される。

【００２６】しかるに、車室側部材１０のドア部１２がエアバッグＡの膨張圧力を受けてドア補強部材３０とともに押し開かれるときには、ヒンジ部材３０および車室側部材１０におけるエアバッグ収容容器Ｃへの取付部３３および４４部分は当該エアバッグ収容容器Ｃと強固に結合されているので、該取付部３３，４４の近傍に設けられた脆弱部であるヒンジ側破断予定部２１および開放側破断予定部２２にエアバッグＡの膨張に伴う応力が効

果的に集中する。この応力の集中によって、ドア部１２は、図４のように、これらのヒンジ側破断予定部２１および開放側破断予定部２２に沿って、前記ヒンジ部材３０のヒンジ部３１を中心として確実に破断する。

【００２７】次に、図７ないし図１５に従って第２の発明構造について説明する。第２の構造は前記第１の発明と同じ目的を達成するもので、図７ないし図９に示したように、車室側部材５０のエアバッグドア開口予定部５１の裏面側にドア補強部材６０が一体に裏打ちされたエアバッグドア構造において、次のような車室側部材５０およびドア補強部材６０の特徴を有する。

【００２８】まず、車室側部材５０のエアバッグドア開口予定部５１には少なくともドア回転軸側５１ａにヒンジ側破断予定部５５が設けられている。図の符号５１ｂはドア解放部側を表し、５２はドア（予定）部、鎖線符号５２Ａは解放されたドア部を示す。

【００２９】一方、ドア補強部材６０はその本体部６２が前記車室側部材５０と一体化されており、かつ該本体部６２には、ヒンジ部６１ならびにヒンジ側取付部６３、および開放側破断予定部７２（７３，７４，７５）ならびに補強部材取付部６４（６５，６６，６７）が形成されている。ドア補強部材６０のヒンジ部６１は、前記したように、エアバッグドア部５２の解放時においてドア回転軸となるもので、図１０の断面図のように、前記車室側部材５０のヒンジ側破断予定部５５の内側に沿って形成される。そして、このヒンジ部６１から一体にエアバッグ収容容器Ｃへのヒンジ側取付部６３が形成される。なお、図の符号７８は取付孔で、エアバッグ収容容器Ｃの取付部Ｃ１にボルトＢ等によって取り付けられるものであることは前記と同様である。

【００３０】また、ドア補強部材６０の解放側破断予定部７２（７３，７４，７５）は、図９からよく理解されるように、車室側部材５０のエアバッグドア開口予定部５１のドア開放部側５１ｂに沿って、３本の破断予定部（線）７３，７４，７５によって略コ字状に形成される。そして、この破断予定部（線）７３，７４，７５には、図１１のように、その外側に沿ってエアバッグ収容容器Ｃへの補強部材取付部６４（６５，６６，６７）がそれぞれ対応して形成される。なお、図のように、ドア補強部材６０の解放側破断予定部７２（７３，７４，７５）は、補強部材取付部６４（６５，６６，６７）の根本部内側に位置するようにすることがその破断を確実にする上で好ましい。図の符号７９は取付孔で、エアバッグ収容容器Ｃの取付部Ｃ２にボルトＢ等によって取り付けられる。

【００３１】ここで、車室側部材５０とドア補強部材６０との関係について若干述べると、図１２（Ａ）（Ｂ）のように、前記車室側部材５０のヒンジ側破断予定部５５Ａ，５５Ｂはドア補強部材６０のヒンジ６１が形成されたヒンジ側取付部６３の根本部外側に位置するように設けることが好ましい。また、該ヒンジ側破断予定部５５Ａ，５５Ｂは図示されるように破断可能な薄肉部であればＶ溝または幅のあるＵ溝等形状、構造は問わない。

【００３２】さらに、図１３のように、車室側部材５０に、破断可能な薄肉の車室側部材解放側破断予定部５６を形成してもよい。この場合において、該車室側部材解放側破断予定部５６はドア補強部材６０の解放側破断予定部７２（７３，７４，７５）に対応して形成される。

【００３３】図１４ないし図１６は、車室側部材１００のエアバッグドア部１０２が両開きのドア構造に係るもので、このドア部１０２は図１４の鎖線１０２Ａ，１０２Ｂのように中央破断予定部１２５から両側に解放されるものである。この両開き構造では、図１５に示すように、車室側部材１００のエアバッグ開口予定部１０１のドア回転軸部側１０１ａ，１０１ａが対向する両側に存在することになる。符号１０１ｂはドア解放部側である。従って、車室側部材１００のヒンジ側破断予定部１０５，１０６は、この対向するエアバッグ開口予定部１０１のドア回転軸部側１０１ａ，１０１ａの外側に沿って２ケ所形成される。

【００３４】同様に、ドア補強部材１１０のドア回転軸となるヒンジ部１１１，１１２ならびにヒンジ側取付部１１４，１１５もこれに対応して２つずつ形成される。そして、前記ヒンジ部１１１，１１２ならびにヒンジ側取付部１１４，１１５の両側に、解放部側破断予定部１２２（１２３，１２４）ならびに補強部材取付部１１６（１１７，１１８）がそれぞれ形成される。なお、符号１２５はドア本体部１１３のほぼ中央に両側の解放部側破断予定部１２２（１２３，１２４）に達するように形成された中央の破断予定部である。この例においては、破断予定部はＨ字状となる。なお、この実施例の構造については、前述と同様である。

【００３５】次に、ここで使用される車室側部材およびドア補強部材の材質について言及する。一般に、エアバッグドア部を車室側部材を構成する樹脂とドア補強部材を構成する樹脂との二層構造体は、あらかじめ成形された補強部材を車室側部材の成形時に型内に配置し車室側部材と一体化したり、あるいは補強部材とエアバッグドア部を有する車室側部材とを同時に射出成形するいわゆるダブルインジェクション成形などによって得られる。

【００３６】しかるに、このような構造とした場合には、用いられる各層の樹脂材料に次に述べる物性が要求される。まず第一に、車室側部材を構成する樹脂材料と補強部材を構成する樹脂材料との接着強度である。また、第二には補強部材を車室側部材成形時のインサートとして用いる場合に、車室側部材の成形性を損ねないためには、型内に配置された補強部材が車室側部材の一般面を成形する溶融樹脂の剪断力を受けても容易に変形しない剛性を有していなければならない。さらに、第三には両層を構成する樹脂材料に応力に対する伸び特性の差

が少ないことである。これは、二層の各樹脂材料の伸びに大きな差があると、エアバッグドア部がエアバッグの膨張を受けるなどして変形した際に、一方の層がその変形に追随できず著しい破壊を生じ破片などが飛散することがあるからである。

【0037】さらに、車室側部材側の樹脂材料では、エアバッグドア部の展開時にはその変形に対応して割れなどをふせぐだけの充分な伸びと剛性、および車室内の温度上昇により変形等を生じることがないように高い耐熱性が必要とされる。また、補強部材側の樹脂材料には、低温での使用に耐える衝撃強度が要求される。

【0038】現在、車室側部材として用いられている主な樹脂材料は、ポリプロピレン系樹脂（表中ＰＰ）、変性ポリフェニレンオキサイド（表中変性ＰＰＯ）、ガラス繊維強化アクリロニトリルースチレン共重合体（表中ＡＳＧ）などがある。また、ドア補強部材として用いられている樹脂材料には、オレフィン系エラストマー（表中ＴＰＯ）、スチレン系エラストマー（表中ＴＰＳ）、ポリエステル系エラストマー（表中ＴＰＥＥ）などの熱可塑性エラストマーの他、ポリフェニレンオキサイドと６－ナイロンとのポリマーアロイ（表中ＰＡ／ＰＰＯ）などが使用されている。本発明者らは、車室側部材またはエアバッグドアとして好適な物性を有するこれら各種の樹脂同士について、その接着性を検討した。結果を以下の表に示す。

【0039】

		車室側部材		
		ＰＰ系	変性ＰＰＯ	ＡＳＧ
ドア補強部材	ＴＰＯ	◎	×	×
	ＴＰＳ	△	○	△
	ＴＰＥＥ	×	×	×
	ＰＡ／ＰＰＯ	×	×	△

【0040】その結果、ＰＰ系樹脂とＴＰＯ系樹脂との組み合わせが最も良好な接着性を発揮することを見出した。そして、これらの樹脂を用いてエアバッグドア部を有する車室側部材を構成しさらに検討したところ、所定の物性を有する前記樹脂を組み合わせた場合に、両層の接着性が良好で成形性にも優れ、しかも高い剛性と熱変形温度を有し、かつ低温時の良好な衝撃強度いずれに対しても優れた物性を発揮することを見出した。

【0041】すなわち、車室側部材とドア補強部材の材質の好ましい組合わせは次のものである。

車室側部材：ＪＩＳ－Ｋ７１１３の引張伸びが３００％より大きく、ＪＩＳ－Ｋ７２０３の曲げ弾性率が２０００ｋｇｆ／ｃｍ² より大きく、ＪＩＳ－Ｋ７２０７の熱変形温度が１２０℃より大きく、ＪＩＳ－Ｋ７１１０のアイゾッド衝撃強度（２３℃）が１５ｋｇ・ｃｍ／ｃｍより大きいポリプロピレン系樹脂によって構成されるもの。

ドア補強部材：ＪＩＳ－Ｋ７２０３の曲げ弾性率が３０００ｋｇｆ／ｃｍ² より大きく、ＪＩＳ－Ｋ７１１０のアイゾッド衝撃強度（－４０℃）が２０ｋｇ・ｃｍ／ｃｍより大きいオレフィン系エラストマーによって構成されるもの。

【0042】この車室側部材とドア補強部材の組合わせ構造によれば、エアバッグドア部が一般面と一体に形成されているので、車室側部材の外観が極めて良好となるだけでなく、従来単層では、車室側部材とエアバッグドア部分とに必要な物性を全て満たすのは困難であったが、このような二層構造とすることで車室側部材とドア補強部材の物性がそれぞれ補完し合い、全体として車室側部材およびエアバッグドア部に必要な物性を保有することができる。

【0043】さらに、車室側部材をポリプロピレン系樹脂で構成し、ドア補強部材をオレフィン系エラストマーにより構成しているので、前記のように両者の接着性は極めて良好で、成形精度および効率は極めてよい。しかも、車室側部材およびドア補強部材がすべて樹脂よりなるので、軽量で取付作業などがやりやすくなる。

【0044】また、車室側部材を構成するポリプロピレン系樹脂の物性を、ＪＩＳ－Ｋ７１１３の引張伸びが３００％より大とすることにより、エアバッグ膨張によりエアバッグドア部が変形した場合、エアバッグドア補強部材の変形および開口に対して車室側部材の変形を追随させるようにして、車室側部材側の破損を防ぎ乗員を保護することができる。そして、ＪＩＳ－Ｋ７１１０のアイゾッド衝撃強度（２３℃）を１５ｋｇ・ｃｍ／ｃｍより大きくすることにより、常温時におけるエアバッグドア部の展開に際し、車室側部材の割れを防ぐことができる。また、ＪＩＳ－Ｋ７２０３の曲げ弾性率を２０００

０ｋｇｆ／ｃｍ² より大とすることによって、車室側部材に充分な形状保持性を付与することができる。さらに、ＪＩＳ－Ｋ７２０７の熱変形温度を１２０℃より大とすることにより、夏季駐車時などの際に直射日光により車室側部材が高温となった場合でも、変形を生ずることがなくなる。

【００４５】さらに、ドア補強部材を構成するオレフィン系エラストマーの物性を、ＪＩＳ－Ｋ７２０３の曲げ弾性率が３０００ｋｇｆ／ｃｍ² より大とすることによって、ドア補強部材に、車室側部材成形時の溶融樹脂の剪断力に対する自己形状保持性を付与することができ、ＪＩＳ－Ｋ７１１０のアイゾッド衝撃強度（－４０℃）を２０ｋｇ・ｃｍ／ｃｍより大とすることにより、低温時におけるエアバッグ展開時に、エアバッグケースへの取付部が破損することが防止される。

【００４６】なお、車室側部材に用いられるポリプロピレン系樹脂としては、前記物性を満たしておれば特に制限されるものではなく、適量の他の熱可塑性樹脂やフィラーなどをブレンドしてもよい。また、ドア補強部材に用いられるオレフィン系エラストマーとしては、ポリプロピレンとエチレン－プロピレン共重合ゴムのブレンド物、あるいはブレンド時に動的加硫を行なったものなどがある。また、前記ポリプロピレン系樹脂、およびオレフィン系エラストマーには、所定の物性を損ねない程度の添加剤を適宜加えることができる。添加剤としては、酸化防止剤、紫外線吸収剤、流動性改良剤、タルクやファイバーなどの補強材などが挙げられる。

【００４７】

【発明の効果】以上図示し説明したように、この発明の構造によれば、車室側部材のエアバッグドア開口予定部の裏面側にドア補強部材が一体に裏打ちされたエアバッグドア構造において、車室側部材のドア回転軸側にヒンジ側破断予定部が設けられ、ドア補強部材のヒンジ部にはエアバッグ収容容器へのヒンジ側取付部が形成され、かつ車室側部材（第１の構造）あるいはドア補強部材（第２の構造）の開放側破断予定部の外側に沿ってエアバッグ収容容器への車室側部材取付部が一体に形成されているものであるから、車室側部材のドア開口予定部周辺がエアバッグ収容容器への取付部によってしっかりと補強されて、エアバッグ膨張の圧力が破断予定部に確実かつ効果的に集中する。従って、ドア部の開放が確実にかつ極めてスムーズに行われる。また、エアバッグドア部の開裂が破断予定部以外の部分に及ぶことがなくなる。さらに、エアバッグドア部を区画する破断予定部は車室側部材に一体に設けられているので、製品の外観性は良好となる。

【図面の簡単な説明】

【図１】第１の発明構造の一例を示す車室側部材のエアバッグドア部周辺の断面図である。

【図２】図１の２－２線で切断した状態の断面図である。

【図３】図１の構造を車室側部材裏面側から見た分解斜視図である。

【図４】同じ実施例構造における車室側部材裏面側の横断面図である。

【図５】別の実施例構造における車室側部材裏面側の横断面図である。

【図６】エアバッグドア部が開放した状態を示す断面図である。

【図７】第２の発明構造の一例を示す車室側部材のエアバッグドア部周辺の断面図である。

【図８】図７の８－８線で切断した状態の断面図である。

【図９】図１の構造を車室側部材裏面側から見た分解斜視図である。

【図１０】同じ実施例構造における車室側部材裏面側の縦断面図である。

【図１１】同じく切断方向を変えた車室側部材裏面側の縦断面図である。

【図１２】ヒンジ側破断予定部の例を示す部分拡大断面図である。

【図１３】開放側破断予定部の例を示す部分拡大断面図である。

【図１４】他の実施例のエアバッグドア部周辺の断面図である。

【図１５】同じ実施例構造を車室側部材裏面側から見た要部の分解斜視図である。

【図１６】図１４の構造における車室側部材裏面側の縦断面図である。

【図１７】従来構造におけるエアバッグドア部周辺の断面図である。

【図１８】図１７の１８－１８線で切断した状態の断面図である。

【図１９】従来構造におけるエアバッグドア部の開放状態の一例を示す概略図である。

【図２０】従来構造におけるエアバッグドア部の開放状態の他の例を示す概略図である。

【図２１】従来構造の破断予定部の一例を示す断面図である。

【図２２】図２１の例においてドア部に圧力が加わった状態を示す断面図である。

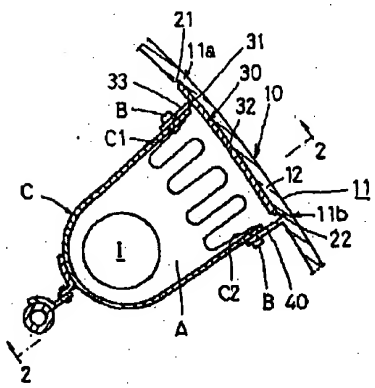
【図２３】同じく図２１の例においてドア部が開放する際の状態を示す断面図である。

【符号の説明】

１０	車室側部材
１１	エアバッグドア開口予定部
１１ａ	ドア回転軸
１１ｂ	ドア開放部側
１２	ドア部
２１	ヒンジ側破断予定部

２２（２３，２４，２５）　開放側破断予定部
３０　ドア補強部材
３１　ヒンジ部
３２　本体部
３３　ヒンジ側取付部
４０（４１，４２，４３）　車室側部材取付部
５０　車室側部材
５１　エアバッグドア開口予定部
５２　ドア部
５５　ヒンジ側破断予定部
５６　開放側破断予定部
６０　ドア補強部材
６１　ヒンジ部
６２　本体部
６３　ヒンジ側取付部
６４（６５，６６，６７）　補強部材取付部
７２（７３，７４，７５）　開放側破断予定部
１００　車室側部材
１０１　エアバッグドア開口予定部
１０２　ドア部
１０５　ヒンジ側破断予定部
１１０　ドア補強部材
１１１，１１２　ヒンジ部
１１３　本体部
１１４，１１５　ヒンジ側取付部
１１６（１１７，１１８）　補強部材取付部
１２２（１２３，１２４）　開放側破断予定部
１２５　中央側破断予定部
Ａ　エアバッグ
Ｃ　エアバッグ収容容器

【図１】



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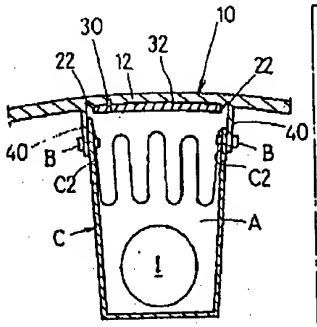

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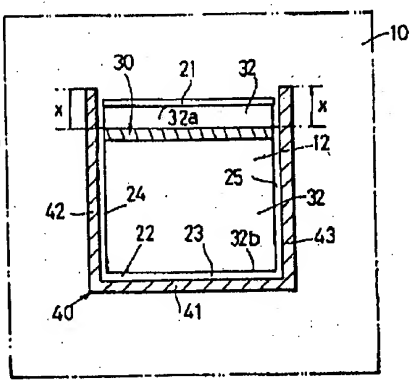

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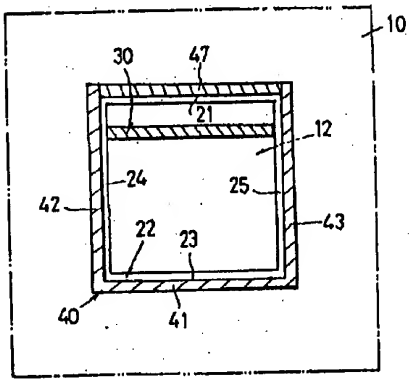

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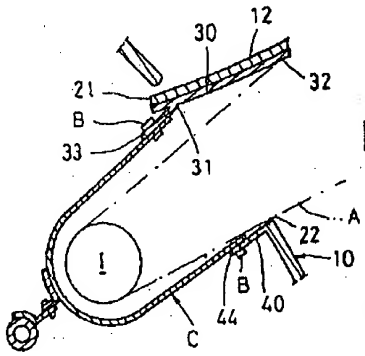

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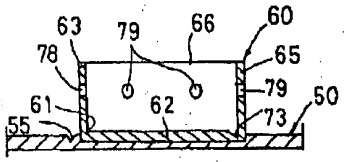

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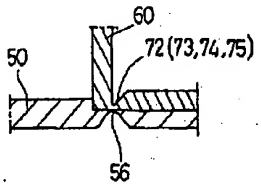

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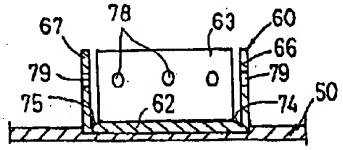

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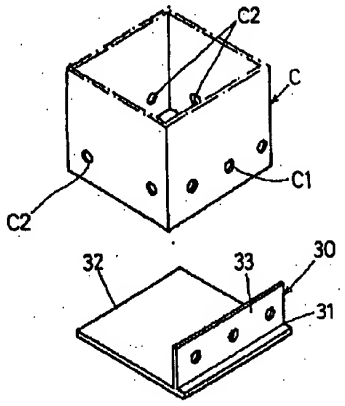

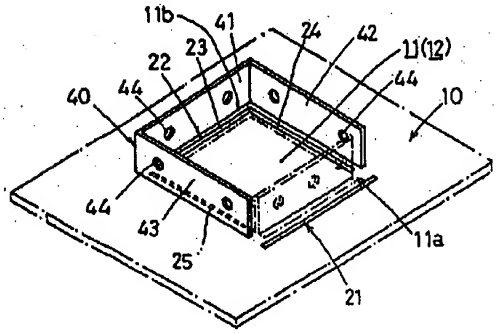

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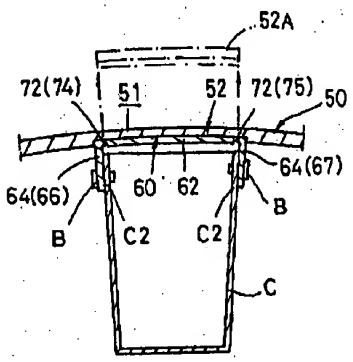

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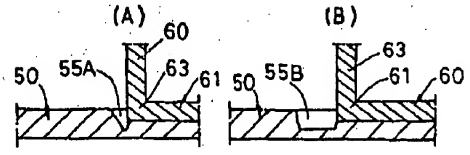

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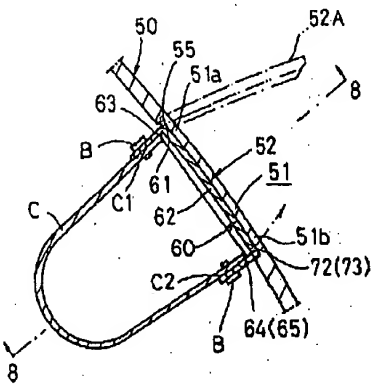

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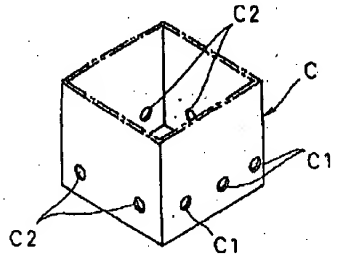

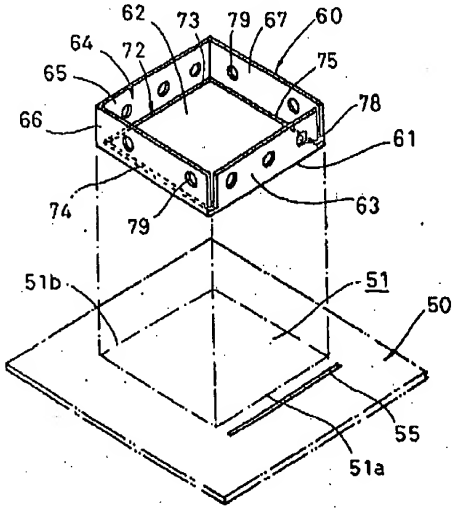

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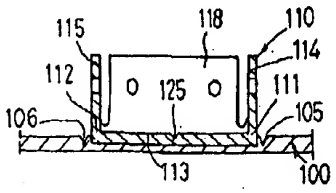

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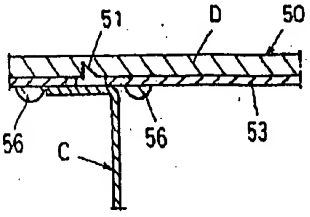

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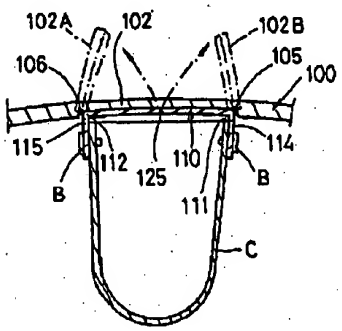

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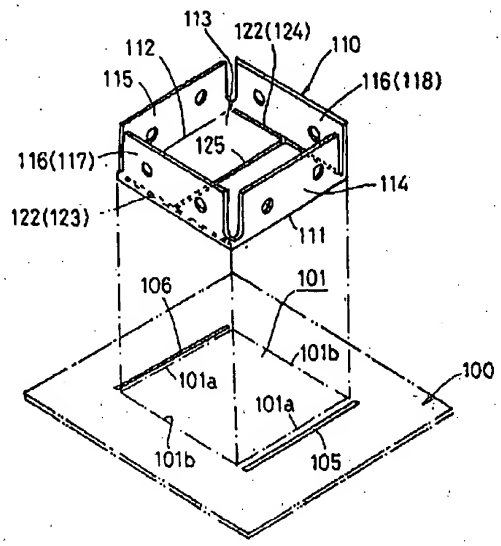

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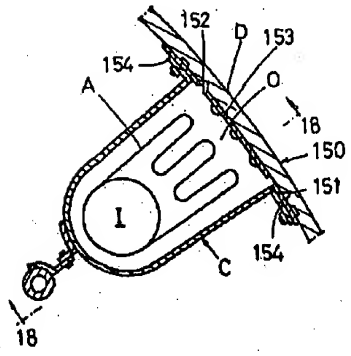

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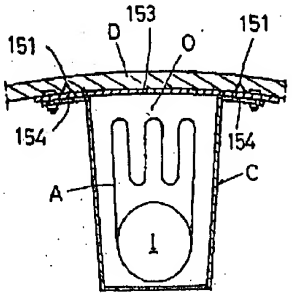

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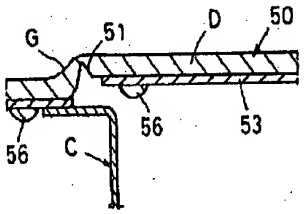

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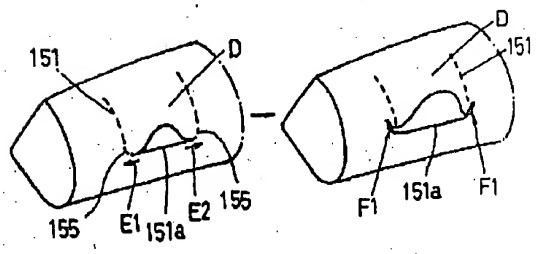

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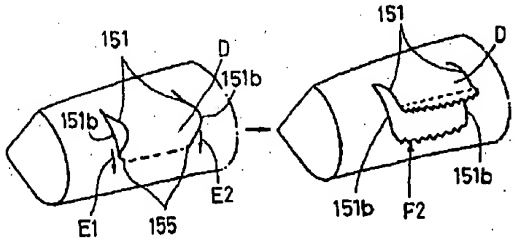

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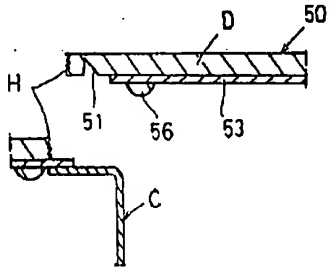

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